

NAVFAC Far East Preserves Culturally, Ecologically Significant Firefly Species in Japan

Efforts Concentrate on Managing & Protecting Critical Habitat

PERSONNEL FROM THE Naval Facilities Engineering Command (NAVFAC) Far East are helping to preserve a culturally and ecologically significant firefly species in Japan through effective captive breeding and habitat protection programs.

Common in traditional literature and a symbol of the Japanese summer, fireflies have special cultural significance in the land of the rising sun. Early in the evening, Genji and Heike fireflies delight people gathered to watch them illuminate and fly along local streams. The ephemeral display—firefly season only lasts between late May and early August—seems to end too quickly. The firefly is used as a metaphor in popular Japanese songs which mark the end of a ceremony, event or even the end of the year.

Fireflies hold ecological significance as well, with many worrying about their diminishing numbers. Increasing

urbanization, water pollution and artificial lights have contributed to a decrease in firefly populations. As a result, Japan's Kanagawa prefectural government has designated the Heike firefly to a status of 'near threatened.'

"The firefly is the most familiar insect for the people in Japan since ancient times. This is especially true in the summer when the people watch the charming Genji firefly," said Dr. Nobuyoshi Ohba, a leading firefly expert in Japan. "These species have been involved in the lives of people for a long period of time along Japan's rural landscape and rice field. However, the fireflies have decreased as people's lifestyle gradually changed due to urbanization. So there are very few now."

The Ikego Housing Area is one of seven U.S. Navy facilities which comprise Commander, Fleet Activities (FLEACT) Yokosuka in Kanagawa prefecture. Ikego's 710 acres are

steadily being surrounded by the growing cities of Zushi, Yokosuka and Yokohama. As is typical of military reservations, U.S. military-managed installations become natural area islands, a refuge for flora and fauna surrounded by urbanization. Within Ikego are 510 acres of undeveloped forest area, having a diverse ecology and high quality streams. Ikego is considered an environmentally significant area providing preferable habitats for the Genji and Heike fireflies.

Six species of fireflies are observed in Ikego. These include Japan's most wide spread firefly, the Genji (*Luciola cruciate*) and the more geographically limited Heike (*Luciola laterali*). Of special interest is that both firefly species have an aquatic larval stage. There are about 2,000 firefly species worldwide, and only 10 aquatic larval stage species are known. The rest are species having a terrestrial only lifecycle. The Genji fireflies are also biological indicators of a healthy fresh water aquatic ecosystem.

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—Dr. Nobuyoshi Ohba

For 10 years, NAVFAC Far East environmental employees at FLEACT Yokosuka have been exclusively managing and protecting the existing firefly habitat. Recently, a portion of land in Ikego Housing Area was designated as joint use between the city of Zushi and the U.S. Navy. The City of Zushi and U.S. Navy created a Memorandum of Understanding (MOU) to collaborate on the protection of endangered species, land use strategies for wildlife corridors, removal of non-native animals and protection of firefly habitat.

“It is important to share this opportunity with Zushi City and the U.S. Navy to preserve the firefly species and its habitat in Ikego,” said Ohba.

Efforts by Zushi City to enhance biodiversity and ecosystem health are done by performing on-site maintenance work removing unwanted vegetation to keep streams clean and promote habitat for the aquatic Kawanina snail species (*Semisulcospira libertina*) which are

the final instar larva stage (the shedding and molting of exoskeleton to convert into adult flying insect).

In February 2016, NAVFAC Far East employees and Zushi City officials released 67 Genji firefly larvae in a stream located in the joint use area. The event was an example of collaborative efforts to continue sound environmental practices in the joint use area outlined in the MOU.

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preyed upon by the firefly larvae. Another enhancement is maintaining trees to provide shade, keeping stream water temperatures from becoming too warm.

NAVFAC Far East conducts captive breeding of Genji and Heike fireflies. Adult fireflies are collected, bred in laboratory aquariums, and larvae released into streams. In 2015, the natural resources program successfully enhanced the species, evident in the hatching of 707 Genji and 95 Heike fireflies, resulting in 198 Genji and 47 Heike surviving to

“The City of Zushi and the local community have raised awareness for the protection of the fireflies’ environment,” said Public Works Department (PWD) Yokosuka Natural Resources Program Manager Hisako Mawatari. “I hope we can plan more nature programs like this in the future.”

NAVFAC Far East has partnership agreements that enable hosting firefly viewing events at Ikego, open to all members of the local Japanese community and military families.





Genji firefly larvae ready for release into Ikego Housing Area stream.

James Johnson

On June 9, 2016 more than 100 people saw Genji fireflies' synchronized flashing along the stream. "This event proves to be an effective educational and awareness tool," said PWD Yokosuka Environmental Director Chuck Sayon. "It reinforces the U.S. Navy's commitment to protection efforts for endangered species and receives high local community praise including recognition from the Zushi City Environment and Urban Greenery Planning Division."



Natural Resources Program Manager Hisako Mawatari (left) and a Zushi City official release Genji firefly larvae into an Ikego Housing Area stream.

James Johnson

"Our natural resources management program is meeting the challenge of protecting natural resources by partnering with local and prefectural governments to meet U.S. and Japanese government environmental protection standards. We encourage participation from military and civilian personnel, schools, base residents, and local Japanese nationals. These efforts improve host nation relations and provide a sense of pride and ownership," said Sayon.

In 2015, FLEACT Yokosuka received the Chief of Naval Operations Environmental Award for Natural Resources Conservation, Small Installation for its efforts to promote the conservation of natural resources, including the increase of the firefly population and restoration of their habitat. [🔗](#)

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